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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,108	08/20/2003	Jong Youl Lee	0001436USU	6507

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EXAMINER	
PANWALKAR, VINEETA S	
ART UNIT	**PAPER NUMBER**
2611	

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,108	LEE, JONG YOUL	
	Examiner	Art Unit	
	Vineeta S. Panwalkar	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/12/04,2/2/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et, al., " Postdetection Diversity Receiver for DAPSK Signals on the Rayleigh- and Rician- Fading Channel", IEEE Transactions on Vehicular Technology, VOL. 50, NO.5, September 2001, hereinafter, Lee.

2a. Regarding claim 1, Lee discloses a differential amplitude detection diversity receiver employing maximal ratio combining (Fig. 2 and Page

1193Section I (Introduction), especially, 3rd paragraph in the right column), comprising:

- a plurality of decision variable calculating sections, each computing at least one amplitude decision variable , said amplitude decision variable being computed by multiplying a distance of a signal by an amplitude of the signal, the signal being received one or more antennas (Fig. 2. shows a receiver with L antennas (claimed one or more antennas). The sections computing the value ($|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$) are interpreted as claimed plurality of decision variable calculating sections because $|z_{l,n} - 1|^2$ represents an amplitude of a signal and $\alpha'_m(\lambda_{l,n} - \beta_m)^2$ represents a distance of the received signal and thus, $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ is interpreted as the claimed amplitude decision variable); and
- an amplitude decision section for composing each computed amplitude decision variable of said plurality of decision variable calculating sections and for determining the amplitude of the received signal by selecting an amplitude candidate value corresponding to a composed amplitude decision variable from the plurality of amplitude decision variable calculating sections (Page 1196, equation (26) yields the claimed composed amplitude decision variable because it composes the compsed $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ via maximal ratio combining (MRC) and β_m is claimed selected amplitude candidate value).

(See pages 1196-1198 and Fig.2).

2b. Regarding claim 2, Lee further discloses the diversity receiver of wherein : each of the plurality of decision variable calculating sections comprises:

- a plurality of differential amplitude calculators (DAC) for calculating an amplitude ratio between an amplitude of the signal received at an (n)th sampling period and an amplitude of the signal received at an (n-1)th sampling period, where n is integer (Fig. 2 shows the elements (claimed DCAs) that calculate $\lambda_{l,n}$, the claimed ratio, calculated using equation (24) on page 1196)and
- a plurality of amplitude hypothesis calculators (AHC) for computing the amplitude decision variable of the received signal, each of the plurality of amplitude hypothesis calculators calculating a distance, the distance being between the amplitude ratio of the signal received at each of the one or more antennas , and said amplitude candidate value, and by multiplying the distances by the amplitudes of the signal being received at the (n)th sampling period(Fig. 2 the elements calculating the individual $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ are claimed AHCs).

(See pages 1196-1198 and Fig.2).

2c. Regarding claim 3, Lee also shows the diversity receiver of claim 1, wherein the amplitude decision section comprises:

- an amplitude combiner (AC) for composing the amplitude decision variable being computed by each of the plurality of decision variable

calculating sections, each amplitude decision variable of the plurality of decision variable calculating sections being composed by the amplitude combiner according to the amplitude candidate value (Fig. 2 shows the claimed amplitude combiner which combines all the individual $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ s using equation (26) on page 1196 to give claimed composed amplitude decision variables); and

- an amplitude detector (AD) for determining the amplitude of the received signal by selecting the amplitude candidate value corresponding to the composed amplitude decision variable of each of the plurality of decision variable calculating sections, the composed amplitude decision variable having a magnitude, the magnitude being a minimum among each of said composed amplitude decision variables of the plurality of decision variable calculating sections(The "choose minimum $p_{m,n}$ block of Fig. 2 is the claimed amplitude detector because it chooses the minimum value amongst the composed amplitude decision variables).

(See pages 1196-1198 and Fig.2).

2d. Regarding claim 4, Lee discloses a differential amplitude detection diversity receiver employing maximal ratio combining (Fig. 2 and Page 1193Section I (Introduction), especially, 3rd paragraph in the right column), with a method of receiving signals using a differential amplitude detection diversity receiver employing maximal ratio combining, comprising:

- computing an amplitude decision variable, said amplitude decision variable being computed variables by multiplying a distance between an amplitude ratio of each of the signals being received at one or more antennas, and an amplitude candidate value by said amplitude of each of the signals being received at said one or more antennas. (Fig. 2. shows a receiver with L antennas (claimed one or more antennas). The sections computing the value ($|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$) are interpreted as performing claimed computing of amplitude decision variable because represents an amplitude $|z_{l,n} - 1|^2$ of a signal and represents a $\alpha'_m(\lambda_{l,n} - \beta_m)^2$ distance of the received signal and thus, $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ is interpreted as the claimed amplitude decision variable and and β_m is claimed selected amplitude candidate value); and
- composing said amplitude decision variables of each of said one or more antennas, said amplitude decision variable being composed according to said amplitude candidate value (Page 1196, equation (26) yields the claimed composed amplitude decision variable because it composes the compsed $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ via maximal ratio combining (MRC)); and
- determining said amplitude of received signal each of the signals by selecting said amplitude candidate value corresponding to said composed amplitude decision variable, whose said selected amplitude candidate value having a magnitude, said magnitude being a minimum

among said composed amplitude decision variables of each of the signals (The "choose minimum $p_{m,n}$ block of Fig. 2 performs claimed amplitude determination because it chooses the minimum value amongst the composed amplitude decision variables).

(See pages 1196-1198 and Fig.2).

2e. Regarding claim 5,Lee also shows the method, wherein said computed amplitude decision variable comprises:

- calculating said amplitude ratio between an amplitude of the signals being received at an (n) th sampling period and an amplitude of the signals being received at an (n-l)th sampling period, wherein n is an integer(Fig. 2 shows the elements that calculate $\lambda_{l,n}$, the claimed ratio, calculated using equation (24) on page 1196)and
- calculating the distance, the distance being between said amplitude ratio of each of the signals being received at said one or more antennas and said amplitude candidate value (equation (25) on page 1196 is used to calculate the claimed distance) ; and
- computing said amplitude decision variable of each of the signals by multiplying the distance by said amplitude of the signal being received at said (n) th sampling period (Fig. 2. The sections computing the value ($|z_{l,n} - 1|^2\ \alpha'_m(\lambda_{l,n} - \beta_m)^2$) are interpreted as performing claimed computing of amplitude decision variable because $|z_{l,n} - 1|^2$ represents an amplitude of a signal and $\alpha'_m(\lambda_{l,n} - \beta_m)^2$ represents a distance of the

received signal and thus, $|z_{l,n} - 1|^2 \alpha'_m(\lambda_{l,n} - \beta_m)^2$ is interpreted as the claimed amplitude decision variable).

(See pages 1196-1198 and Fig.2).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Jones et al. (US 6654340 B1) show differential OFDM diversity receiver with DAPSK.
- Takai (US 4856025) shows the calculation of amplitude ratios in a diversity model.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vineeta S. Panwalkar whose telephone number is 571-272-8561. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VP